

[12] DESCRIPTION OF UTILITY MODEL PATENT

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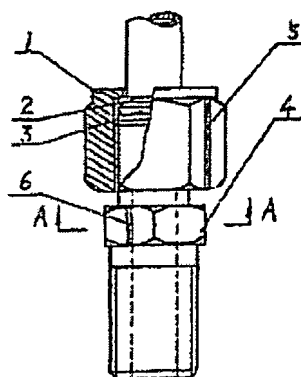
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[54] **Name of the Utility Model:** Cutting Ring
Coupling Device with Fitting Marks

[57] **Abstract**

This utility model is an improvement of the cutting ring coupling device, especially those cutting ring coupling devices with fitting marks, including a body, a front cutting ring, a back cutting ring, and a nut. When manually tightening the nut and the body, a nick is cut on both the nut and the body with a central angle of 80° - 100° between the nicks. To use the said utility model, rotate the nut to a designated turn to align the nick on the nut with the nick on the body. In this way, problems which occur during the installation of the cutting ring coupling, such as reduction of the number of times re-fitting or leakage can be solved, and produce the benefits of time saving, effortlessness, efficiency, and easy popularization can be realized.



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PATENT CLAIMS

1. A cutting ring coupling connection device with fitting marks, including a body (4), a front cutting ring (3), a back cutting ring (2), and a nut (1), where a nick (5) is cut on the nut (1) which is parallel to the axial line of the nut, and another nick (6) is cut on the body (4) when manually tightening the nut (1) to the body (4). The central angle between the two nicks is either 80° - 100° or 0° .
2. The cutting ring coupling connection device with fitting marks described in Claim 1. It features that the central angle clockwise from the nick (5) on the nut (1) to the nick (6) on the body (4) is 80° - 100° .
3. The cutting ring coupling connection device with fitting marks described in Claim 1. It features that the central angle counterclockwise from the nick (5) on the nut (1) to the nick (6) on the body (4) is 80° - 100° .
4. The cutting ring coupling connection device with fitting marks described in Claim 1. It features that the central angle between the said two nicks is 0° when the nick (5) on the nut (1) and the nick (6) on the body (4) are aligned on a straight line.
5. The cutting ring coupling connection device with fitting marks described in Claim 1. It features that the body (4) of the cutting ring coupling can be either the nut of the pipe connector or a valve.

DESCRIPTION

CUTTING RING COUPLING DEVICE WITH FITTING MARKS

This utility model is an improvement of the cutting ring coupling device, especially those cutting ring coupling devices with fitting marks.

In the past, when a cutting ring coupling device is needed for pipe connection, the installer usually tightens the nut on the cutting ring coupling manually, making a mark on the nut, and rotating the nut clockwise with a wrench/pliers until the mark on the nut reaches 1-1/4 turn from its original position, i.e. after a rotation of 450° . When re-fitting, the installer shall remember the position of the mark on the nut, rotate the nut to the original marked position or make a 1/4 turn. Following this procedure, the installation of the cutting ring coupling can be repeated 1,000 times. However, in the practice of industrial installation, there are thousands of couplings to install. It is impossible for the installer to make marks on each coupling. Instead, they have to work based on their experience and/or sense which leads either to an excessive angle of rotation ($>450^{\circ}$) or an insufficient angle of rotation ($<450^{\circ}$). While the former makes an over-tight connection which significantly decreases the number of times for re-fitting, the latter would cause leakage resulting in additional losses to the enterprise.

The purpose of the said utility model is to provide a cutting ring coupling device with fitting marks. By enabling a proper tightness of the coupling connection, it helps avoid excessively tight and loose coupling connections due to an improper angle of rotation, preventing piping leakage effectively, and ensuring that the coupling's number of re-fitting times would not be reduced.

The said utility model is embodied in the approach as follows: a cutting ring coupling device with fitting marks, including a body, a front cutting ring, a back cutting ring, and a nut. When tightening the nut and the body manually, make a nick on the nut which runs parallel to the axis of the nut. Make another nick on the body. The central angle between the two nicks should be either 80° - 100° or 0° .

To use the said utility model, first connect the pipes and this coupling, manually tighten the nut attached to the body as far as it goes, and rotate the nut clockwise to the designated amount of turn with a wrench/pliers. In comparison to the cutting ring coupling device without the nicks, the said utility mode makes the fitting job more simple and easier. Moreover, other installers can be reminded that the coupling is already in place and no more tightening is needed. In this way, problems with reduced re-fitting number of times and leakage can be eliminated.

Fig. 1 is a schematic drawing of the front view of the said utility model. Fig. 2 is a sectional view showing an A-A profile line indicated in Fig. 1. A detailed description of the said utility model is provided below with reference to additional drawings.

A cutting ring coupling device with fitting marks where a front cutting ring (3), a back cutting ring (2), and a nut (1) are attached to the body (4). For pipes with a diameter of 6 – 25 mm or 1/4" – 1", when manually tightening the nut (1) and the body (4) as shown in Fig. 1 and Fig. 2, a nick (5) will be cut on the nut (1) in a position parallel to the axial line of the nut, and another nick (6) will be cut on the body (4). The nick (6) should be in the clockwise direction of the nick (5). The central angle from the position of the nick (5) to the position of the nick (6) is 80° - 100° . For pipes with a diameter of 2, 3, and 4 mm or 1/16", 1/8", and 3/16", the nick (6) should be in the counterclockwise direction of the nick (5). The central angle between the nicks should be 80° - 100° . To install pipes with a diameter of 6 – 25 mm or 1/4" – 1", manually tighten the nut (1) to the body (4), use a wrench/pliers to rotate the nut (1) clockwise for 1-1/4 turns, align the nick (5) with the nick (6), and complete the leakage-free installation. To install pipes with a diameter of 2, 3, and 4 mm or 1/16", 1/8", and 3/16", the procedure to follow is basically the same as described above. The difference is that the nut (1) needs to be rotated for only 3/4 turn, and align the nick on the nut (1) and the body (4). The body (4) can be a pipe-fitting nut or other connectors such as two-way, three-way, four-way or elbow ones. It also can

be a valve. For cutting ring couplings with a pipe diameter of 25 – 50 mm or 1" – 2", the marking method based on the same principles can be used.

Certainly, it is also feasible to cut a single nick running through the nut (1) and the body (4) when manually tightening the nut (1) and the body (4), i.e. the nick on the nut (1) and the nick on the body (4) forming one straight line and the central angle is 0^0 . In this case, when installing pipes with a diameter of 6 – 25 mm or 1/4" – 1", a leakage-free connection also can be completed by manually tightening the nut (1) to the body (4), and rotating the nut (1) clockwise using a wrench/pliers to rotate the nick in the nut (1) 1-1/4 turns relative to the nick on the body (4). When installing pipes with a diameter of 2, 3, and 4 mm or 1/16", 1/8", and 3/16", one just needs to rotate the nut (1) clockwise to rotate the nick in the nut (1) 3/4 turns relative to the nick on the body (4) and complete the installation.

DESCRIPTION DRAWINGS

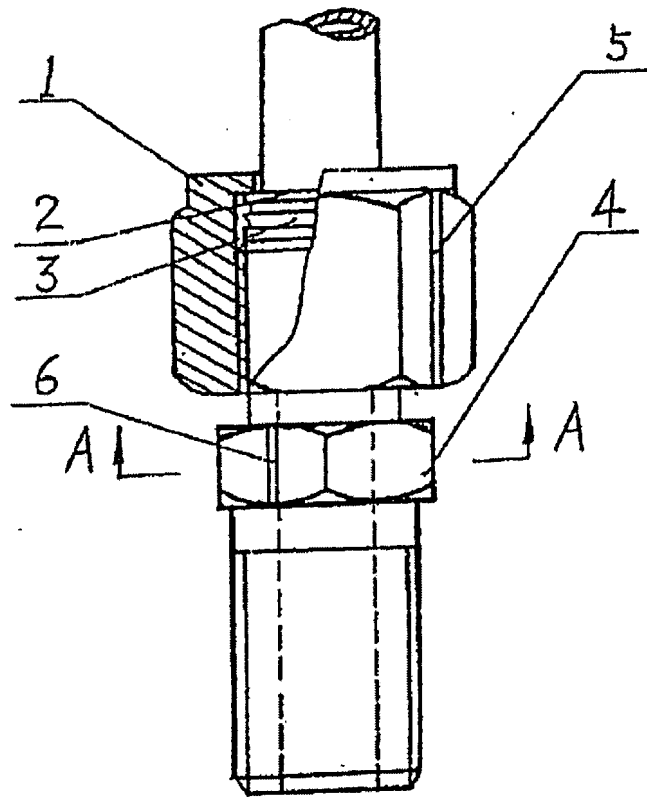
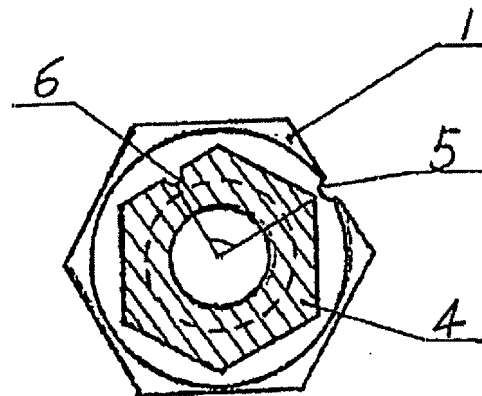


Fig. 1



A-A

Fig. 2